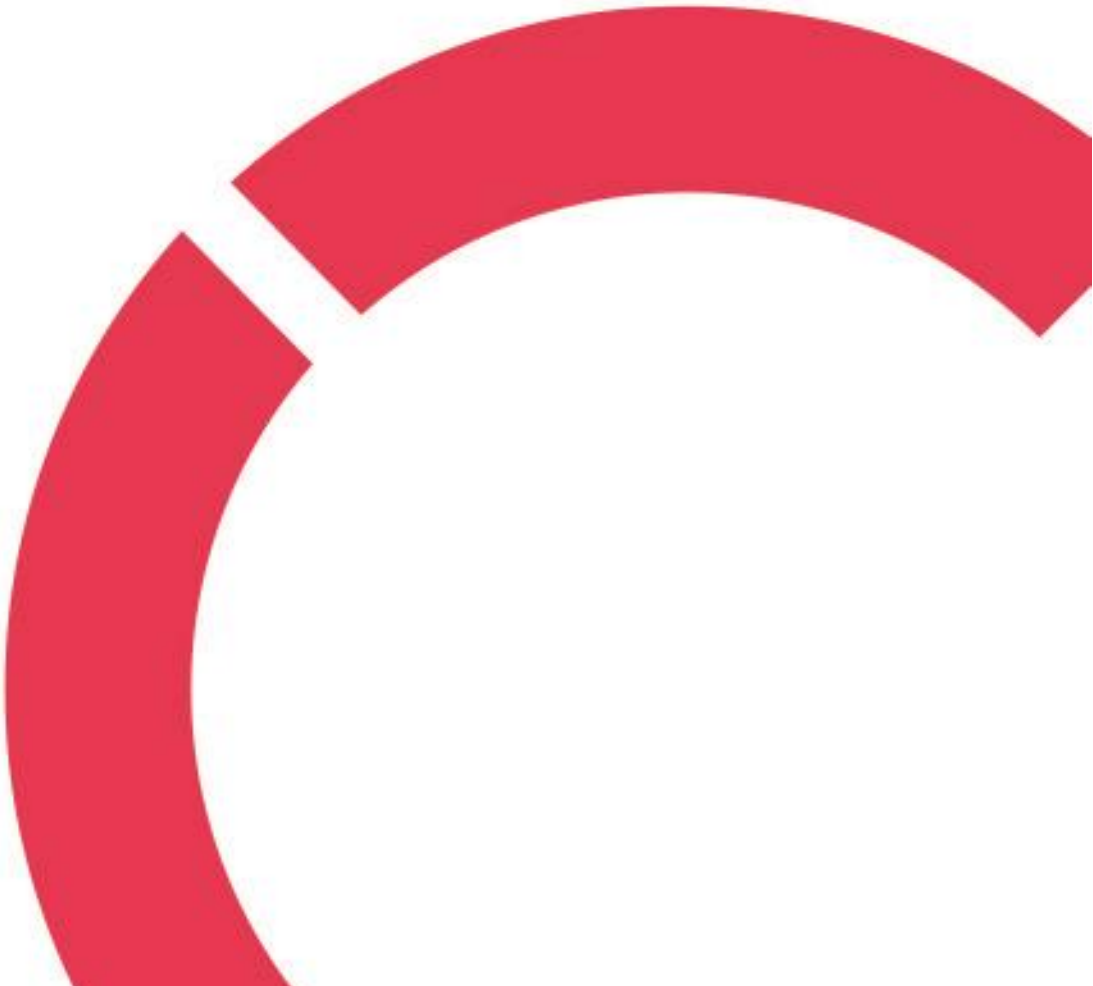
Olaofe Enitan & Chepchumba Damaris

PROMOTING BREASTFEEDING AND SAFE PHARMACOTHERAPY DURING PREGNANCY AND AFTER THE BIRTH.

Educational video for nursing students.

Thesis
CENTRIA UNIVERSITY OF APPLIED SCIENCES
Degree Programme
November 2023



ABSTRACT

Centria University of Applied Sciences	**Date** 19.11.2023	**Author** Enitan Olaofe & Damaris Chepchumba
Degree programme Bachelor of Healthcare, Nursing		
Name of thesis PROMOTING BREASTFEEDING AND SAFE PHARMACOTHERAPY DURING PREGNANCY AND AFTER THE BIRTH. Educational video for nursing students.		
Centria supervisor Pia Hagqvist		**Pages** 33+3

The purpose is to develop an educational video for the Centria´s nursing students that will describe the process and advantages of safe pharmacology during pregnancy and lactation, the process of lactation, and how to promote safe pregnancy and breastfeeding among women. This thesis is in two parts; the first part is the theoretical part explaining pharmacotherapy during pregnancy and breastfeeding as well as the maternal care in Finland and the second part which is a video demonstrating breastfeeding positions.

The objectives of this product will be to create awareness and educate nursing students about the breastfeeding process and to teach them how they can guide nursing mothers to breastfeed, proper breastfeeding positions and the available support for breastfeeding mothers. The video will also guide the nursing students on ways of ensuring safe pharmacotherapy during the breastfeeding process. The topic is important as it prevents complications that come with unsafe pharmacotherapy during pregnancy and lactation and the future complication. The topic is important to improve the quality of nursing care in family and child health, to educate nursing student about maternal practices and to encourage wellbeing of the expectant parent and child.

The educational video was created in coordination with the Centria UAS' nursing teacher which is totally based on evidence-based articles, journals, papers, and books. The video begins with an introduction of the scenarios, which is followed by a series of patient education when a patient realises, they are pregnant, patient guidance through the process and finally a demonstration of breastfeeding positions once the baby has been born.

Key words:
Breast feeding, Breastfeeding positions, Health promotion, Maternal Care in Finland, Nurse, Pregnancy, Safe pharmacotherapy.

CONCEPT DEFINITIONS

HPL

Human placental lactogen

HCG

Human chorionic gonadotropin

ACTH

Adrenocorticotropic hormone

hGH-V

Growth hormone variant

PTH-rP

Parathyroid hormone-related protein

FSH

Follicular stimulating hormone (FSH)

LH

Luteinizing hormone

ACE

angiotensin-converting enzyme

NSAIDs

nonsteroidal anti-inflammatory drugs

ARBs

angiotensin II receptor blockers

SSRIs

Selective serotonin reuptake inhibitors

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1 INTRODUCTION

A healthy pregnancy journey promotes the growth of a healthy generation in the future. This is achieved by practicing of evidence-based safe pharmacotherapy during pregnancy and lactation. Pharmacotherapy or drug therapy cannot be avoided during pregnancy due to several reasons such as treatment of an existing health condition, treatment of a developing disease or in case of an accident. This cannot be avoided but it can be safely planned and regulated to prevent minimum effect on the development of the foetus and child in future. However, there are still gaps on the safety in use of some medications during pregnancy due to insufficient evidence-based information. There is a challenge also with the neglect and unawareness on the patient´s side for example drug users and those who are not aware of the pregnancy during the preliminary stages hence they fail to get the proper guidance on the use of drugs during the onset of pregnancy which is the critical periods for foetal development (Schellack, Schellack & Kriel 2015.)

Drug therapy has effect on the distinct stages of foetus development during pregnancy; the first stage known as the first trimester where conception also fertilization, implantation and embryo development occurs. At this stage there are risks of voluntary abortion and resorption of the conception products which may happen without notice. The embryo at this stage is more vulnerable to structural deformities therefore pharmacotherapy should be carefully utilized at this stage as this can be transferred to the developing embryo. The second stage known as the second trimester; the foetus develops from the embryo while the last stage is known as the third trimester. During these two stages, the development of the foetus advances; the extrinsic genital organs the central nervous system further develops until birth. There is a potential effect of the drug therapy on the developing foetus at these stages include limitations on growth, maturation, behavioural, mental cognitive and structural activities (G: Schellack et al 2015.)

At the end of the third trimester, foetus is matured enough and is ready to be born. During the process of giving birth and after birth, drug therapy can have a direct effect on the baby from the painkillers and the general anaesthesia used during a caesarean delivery. This will affect the consciousness of the baby and can cause sleeping problem to the child. The components of the drugs can also be transferred to the baby during breast feeding affect the continuous growth of the child the size and water retention in the child’s body. Drug therapy during pregnancy and lactation has potentially harmful effects on the

child’s growth and health at any stage. It is important to understand the pharmacokinetics and pharmacodynamics of the different drugs and medications used during pregnancy and lactation to prevent shortcomings in the development of the child in the future (Shellack et al. 2015)

After delivery, pharmacotherapy also continues as medication substances can be transferred through the breastmilk, since it is the duty of a nurse to perform health promotion, this thesis will also educate nursing students about breast feeding process, the formation of milk, the challenges of breast feeding and the right breastfeeding positions.

2 MATERNAL CARE IN FINLAND

The maternal child death rate has fallen rapidly since the middle ’70s in Finland which makes the country now well known for having one of the best maternal healthcare services in the world with an average of about two maternal deaths out of a thousand births (UNICEF 2020). The Finnish government has legislation put in place for its citizens and residents for which provisions concerning the pregnant, maternal, and child-care welfare are made. These decrees ensure that expecting women and their family members receive impartial and quality health service and counselling in their municipalities. These also make sure the authorities responsible for public health have a uniform plan of action towards maternity and child services. Extensive health examinations for families expecting a baby shall involve the health check of the mother and fetus also an investigation of the well-being of the family through an interview and other means, as necessary (Government Decree 2011/338,2). For every expectant parent, health counselling sessions must be put in place for both parents and during these counselling sessions, they are to be informed about the pregnancy and related risks including the potential change that may occur to their mental health during the childbirth period. These legislations have been of immense help to pregnant women and their family members in Finland as they are now assured of a quality healthcare service during and after pregnancy and disobeying the legislation have some consequences.

The maternity care in Finland begins when a woman is confirmed pregnant, the woman goes to the nearest maternity health clinic according to the advice given by the Finnish government about pregnancy. The mother gets an appointment with the nurse in the first trimester since the pregnancy is delicate at this stage and discusses some early symptoms which include slight cramping, morning sickness and bloating, at this stage the placenta which the fetus will use in deriving nutrient is just being formed (Cleveland clinic 2020). The second trimester is when the mother gets her first doctor appointment and ultrasound is done to discover the sex of the fetus and at this stage, the mother can feel the movement of the child in her womb and this stage is considered the best stage in pregnancy as the morning sickness and discomforts are mostly gone. The expectant mother now has a baby bump, this period lasts from the 13th week to 28th week. During this period, the body of the woman prepares itself for delivery and the baby now kicks actively but close to the delivery period the baby will have a restricted movement because of the tight space at this stage (Cleveland clinic 2020).

Finland's Maternal Care Services ensure the health of the mother and the child by offering complete prenatal, postnatal, and postpartum assistance. To maintain a close watch on the mother's health, medi-

cal experts do screenings, diagnostic testing, and routine check-ups. Expectant women get prenatal education and assistance so they may make educated decisions. Hospitals ensure a safe and comfortable delivery experience by adhering to best practices. Mothers can get postnatal assistance, which includes breastfeeding support, to help them get used to their new position. Comprehensive prenatal care, including blood testing, genetic screenings, and ultrasounds, is emphasized in Finland's healthcare system. By assisting in the detection of diseases including pre-eclampsia, gestational diabetes, and chromosomal abnormalities, these tests enhance the quality of pregnancies and enable expecting parents to make well-informed decisions regarding their treatment.

Finland offers free antenatal services to pregnant women from the European Union countries while citizens of other countries must bear the cost of the care which is usually affordable. The Finnish healthcare system monitors pregnancy growth and determines the best type of treatment for the expecting mother. Pregnancies are monitored at the child health clinics that are put in place by the various municipalities in Finland. A nurse is assigned to each expecting mother who monitors the growth and development of the fetus and gives advice on a healthy lifestyle during this period. A book will be given to the pregnant woman which she will take home and use to record her symptoms and any other thing she observes during the pregnancy time. Towards the end of the fourth month, a certificate of pregnancy will be granted to the expectant mother which will be used in applying for maternal benefits in the future. Finland also provides a special maternity package commonly known as the baby box a few months before delivery, for parents who do not want to receive the baby box, a small amount of money is given to them in exchange for the baby box by the state and this comes as a form of relief to the parents. During pregnancy, the expectant mother meets up with the nurse assigned to her around eight to ten times and visits the doctor just two to three times (Terveysportti 2022.)

The Finnish healthcare system offers good services when it comes to childbirth in the healthcare sector. In Finland, the person who has given birth to the child is the mother (Maternity Act 2018, 1). After the expectant mother has been told the expected due date of delivery during the ultrasound test, the maternity clinic would inform the expectant mother about which hospital to visit when in labour because in the Finnish healthcare system childbirth occurs in the hospital. In most Finnish hospitals, the pregnant woman delivers naturally except in some cases where the caesarean section is required. The father of the child or someone else considered to be a form of support is allowed into the labour room to encourage the mother during the delivery process, a translator can be made available during delivery if the expecting mother does not understand and speak Finnish as this will make the delivery process easier (Terveysportti 2022). The baby is then weighed and taken out of the labour room by a maternity nurse for a general check-up. While this is going on, the new mother is being transferred to the maternity ward for

a check-up and proper care. When the general check-up has been observed on both mother and child, the child is taken to the mother for breastfeeding, and they both take a nap. The new mother is normally discharged a few days after delivery.

The postnatal care in Finland starts immediately after the birth of the child and this has been of great advantage to the country because Finland has one of the lowest maternal death rates in the world (Schmidt & Bachmann 2021).After the birth of the child, breastfeeding of the child starts, and the new mother needs to visit the doctor two weeks after delivery to discuss contraceptives and plans, the baby is usually vaccinated after three months. The certificate of pregnancy given to the mother can be used to apply for maternity allowance, and this is paid to the mother for 105 working days. The child's family is also entitled to a parental allowance of 158 working days from the social insurance institute (KELA) immediately after the maternal allowance period is exceeded. If a person gives birth to more than one child at a time, an extra 60 weekdays are added to the parental allowance and for each allowance received, tax is being paid on it a different application is received for each application.

3 PREGNANCY

Pregnancy is the series of alterations that occurs in the cells and tissues of a woman during the development of a fertilized egg (Huffman 2023). The period from which the egg of a woman is fertilized to the conception period is called gestation and this is also referred to as when a woman is pregnant.

3.1 **Fertilization**

Every month, one of the two ovaries of a healthy matured female releases a fertile ovum into the fallopian tube to be fertilized by a sperm. During sexual intercourse, several sperms are released by the male genital system into the vagina of the female and these spermatozoans swim their way into the uterus and then proceeds to enter the uterine tube also called the fallopian tube, the component contained in the spermatozoa and the fallopian wall lining cause the ovum to lose its outer coat of cells once it enters the tube. Many spermatozoa can enter the outermost layer of the egg when the ovum loses its outer coating, however, only one spermatozoon acts as the fertilizing cell. The head, which still contains its nucleus, remains while the tail vanishes. The head enlarges and transforms into the male pronucleus as it moves toward the ovum's nucleus, which is also referred to as the female pronucleus. The two pronuclei converge in the ovum's centre, where their chromatin material, which resembles threads, arranges into chromosomes (Huffman 2023.) The combined male and female cell are now referred to as a zygote at this stage. The zygote moves to the uterine cavity, which can also be called the uterus, about 72 hours after fertilization. The mucous membrane that lines the tube's interior secretions provides the zygote with nutrition as it travels through. When the zygote enters the uterus, it has transformed into a solid morula, which consists of at least 60 cells. The blastocyst, a hollow structure like a bubble, is formed as the number of cells in a morula rises. For a brief period, the blastocyst floats freely in the uterus cavity while being fed by uterine secretions before being implanted in the uterine lining. The blastocyst usually implants itself in the top part of the uterine lining.

The uterus needs to be structurally and functionally remodelled to have a successful implantation. After the morula penetrates the uterine cavity and prepares for attachment, around one to three days later, the process of implantation begins with the loss of the zona pellucida, also known as hatching. The molecular makeup of the developing blastocyst alters, leaving behind a surface with increased microvilli and a build-up of glycogen granules in the cytoplasm. Three processes make up implantation: apposition which occurs when the blastocyst meets the endometrium, adhesion is the second stage when

the blastocyst's trophoblast cells begin to attach to the responsive endometrial epithelium), and invasion which is when the blastocyst's invasive trophoblast cells cross the endometrial epithelial basement membrane (Kim & Kim 2017.)

3.2 Symptoms of pregnancy

Pregnancy comes with a lot of changes in the woman's body which are often referred to as symptoms of pregnancy and these symptoms varies among individuals as the body reacts differently during pregnancy. Some of these symptoms are more common than others and they can occur in various intensity. Some symptoms appear earlier during pregnancy while some appear later, and this is according to the level of hormones. Some notable early symptoms in most women are: cramping and spotting which can also be referred to as implantation bleeding, this type of bleeding is lighter than a regular period and it occurs during implantation in the uterus, the colour of the blood can vary from red to light pink or brown and it does not last as long as a period, not every person experience implantation bleeding, another common symptom is missed period due to the fact that there is a fertilized egg in the uterus, the female hormone sends a message to the ovaries not to release matured egg for fertilization anymore and this disrupts the process of menstrual cycle and leads to missed period, other symptoms that can occur are, headache, constipation, weight gain, heartburn, cramps, backpain, anaemia, acne and changes in the breast form and size. (Holland, 2021.) Some symptoms occur later during the pregnancy and these symptoms includes experiencing back and pelvic pain, frequent urination, Braxton hicks also referred to as practice contraction, shortness of breath, heartburn, varicose vein, and swollen legs (Mayo Clinic 2022).

3.3 **Pregnancy Hormones**

Since there are physiological changes between the mother and the foetus, endocrinology during human pregnancy encompasses endocrine and metabolic changes. Oestrogen and progesterone both play important roles; up until 10 weeks, the corpus luteum is the primary source of progesterone production. 250 mg are produced by the placenta each day, with the majority going there. Human placental lactogen (hPL), human chorionic gonadotropin (hCG), adrenocorticotropic hormone (ACTH), growth hormone variant (hGH-V), parathyroid hormone-related protein (PTH-rP), calcitonin, relaxin, inhibins, activins and others are examples of protein hormones. HCG is the most common protein in pregnancy

as is a vital trophoblast hormone which keeps the ovarian granulosa cells from secreting progesterone and prevents the corpus luteum from involution. Given its initial release, it can be used as an early indication of pregnancy. The eight to tenth weeks of pregnancy are when placental production peaks before declining. (Kumar & Magon 2012.) Human placental lactogen(hPL) hormone can also be called human chorionic somatomammotropin. The placenta releases this hormone for the foetus to receive nutrients from it and, it also triggers the mammary glands for easier lactation. The corpus luteum in the ovaries produces most of the oestrogen throughout pregnancy, with the placenta creating the rest of the estriol and oestrogen. Using an oestrogen precursor supplied by the foetus, the placenta is unable to alter cholesterol into oestrogen. The placenta and the system required for the movement of nutrients and wastes are both developed during pregnancy with the aid of oestrogen. Additionally, it initiates the growth of other organs, including the endocrine glands, liver, and lungs. Increased oestrogen levels support uterine growth, lining maintenance, and circulation and the development of vascular organs. Follicular stimulating hormone (FSH) and luteinizing hormone (LH) are suppressed, which prevents ovulation. In addition to getting the body ready for birth and breastfeeding, it also encourages milk production and breast tissue growth. High oestrogen levels, nonetheless, can also result in hyperpigmentation, congested noses, varicose veins, oedema, nausea, sore breasts, and other pregnancy symptoms. (Brighten 2022.)

Progesterone, commonly referred to as the "pregnancy hormone," is a hormone that aids in the implantation of the fertilized egg in the uterus to start and sustain a pregnancy. The Corpus Luteum, which continues to manufacture progesterone for 10 weeks throughout pregnancy, is the source of its production. Progesterone levels increase significantly throughout the first trimester before declining shortly before the placenta takes over production of the hormone. By preventing uterine contractions and assisting the immune system in tolerating foreign DNA, progesterone is crucial in establishing the ideal conditions for the ovaries to host the developing foetus. Progesterone supplements may occasionally be required during IVF or other reproductive procedures because women's ovarian follicles may not secrete enough of the hormone. Progesterone stimulates the luteal phase and changes the endometrium before conception to assist the uterus become ready for pregnancy. The foetus's attachment to the uterine wall triggers the peak in progesterone levels. Progesterone helps the developing foetus throughout pregnancy and acts as a diuretic to restore appropriate bodily fluid and salt levels. The foetus is then nurtured as it begins to grow as progesterone is then created (Brighten 2022). The placenta takes over progesterone production after 8 to 10 weeks of pregnancy and increases it till the conception. Progesterone can be supplemented in wide range of forms if there is a low level of the hormone, including vaginal suppositories, vaginal gel, vaginal implants, and injections. Birth abnormalities may be linked

to synthetic progesterone, which is made from the male hormone testosterone if used during pregnancy. To prevent side effects like oedema or abdominal discomfort, hot flashes, depressive symptoms, discharge from the genitals, urinary tract infections, dizziness, abdominal pain or cramping, headaches, breast tenderness, and joint pain, it is crucial to speak with a doctor before taking progesterone during pregnancy. (Brighten 2022.)

3.4 **Pregnancy and Pharmacotherapy**

During a healthy pregnancy, there is a lot of care and concern about what medication a woman can receive and the dosage of the medication as this can have effect on the unborn child or cause a developmental problem before and after delivery. Pharmacotherapy involves pharmacodynamics and pharmacokinetics. Pharmacodynamics which is mostly referred to as what drug does to the body (Ansari, Carvalho, Shafer & Flood 2016) and pharmacokinetics is referred to as what the body does to the drug. The bioavailability of oral drugs can be affected by pregnancy. Medicines administered to a woman before becoming pregnant may have different dose-response interactions due to changes in pharmacokinetics or pharmacodynamics. The dosage may become ineffective with repeated administration or result in new adverse effects (Avram 2020). Absorption time after oral administration should not change because the process of emptying the stomach is constant even during pregnancy. The activation, absorption, metabolism, and offset of prodrugs can all be affected by changes in liver enzyme activity for example, the prodrug codeine is metabolized to morphine by the enzyme CYP2D6 in the liver, which results in fluctuating CYP2D6 activity. The pulmonary absorption of inhaled medications may be impacted by modifications to ventilation during pregnancy. While hepatic metabolism of medications may change during pregnancy, increased glomerular filtration rate also improves renal drug clearance. The distribution of medicines is changed by an average increase in body water of 8 litres, which lowers the peak serum levels of several medications. Due to more free medication being accessible for hepatic biotransformation or renal excretion, hypoalbuminemia during pregnancy causes an increase in the free medication portion, but this remains unaffected. The placental and foetal ability to metabolise drugs, as well as physiological aspects like acid-base homeostasis, determine the foetal exposure to medicines ingested by the mother. (Loebstein, Lalkin & Koren 1997.) High plasma morphine peaks are produced by ultrarapid metabolizers, which may result in quick pain alleviation but raise opioid toxicity during pregnancy as morphine is delivered to the baby through breast milk (Ansari et al.2016), this is especially dangerous during breastfeeding as the baby can get an opioid addic-

tion. Due to fear of foetal teratogenesis, most women do not want to use their medication during pregnancy even though the medications have been prescribed by a physician for either a healthy pregnancy or for some pregnancy induced conditions such as hyperemesis gravidum, anaemia, gestational diabetes and preeclampsia (Haas, Renbarger, Denne, Ahmed, Easterling, Feibus, Meslin, Koren, Zajicek, Snodgrass & Flockhart 2009).

According to Lowdermilk, Perry, Cashion, Alden & Olshansky (2015), pregnancy lasts nine calendar months, which is equal to ten lunar months, or 40 weeks, or roughly 280 days. The duration is commonly estimated from the last menstrual cycle. Even though the first three months following birth are regarded as the fourth trimester, pregnancy can often be divided into three trimester weeks known as the first trimester, second trimester, and third trimester. The first trimester lasts from the first day of the last menstrual period until the end of the 12th week, the second trimester lasts from the 13th week until the end of the 28th week, and the third trimester lasts from the 29th week until the conclusion of the pregnancy, which is generally thought to last till the fortieth week (Galan 2021), though some late-term pregnancies can last up to forty-two weeks. The medications a pregnant woman uses during these days plays vital roles in the development of the child.

3.4.1 Pharmacotherapy During First Trimester

The first trimester of pregnancy begins from the first day of conception and lasts twelve weeks which is three calendar months. The unborn child is called an embryo until the seventh week of pregnancy and from the eighth week, it is referred to as a foetus. The neural tube, digestive system, heart, and circulatory system are among the key organs and systems that begin to form at four weeks of gestation. Although the heart begins to beat and limb buds begin to form, the sound of the heartbeat is not yet audible, but by the eighth week, the embryo has a larger head and tooth buds in the mouth, the embryo is assuming a morphology that is increasingly resembling that of a human being as the systems of the body continue to develop. More distinction can be seen in the ears, mouth, nose, and eyes (Lowdermilk et al). The fingers and toes are webbed yet distinct, and the arms and legs are obvious. The baby's major organs are also growing, and a Doppler device can detect the heartbeat. While the nose and jaws are rapidly growing, the bones are just starting to form. Although the embryo is constantly moving, the mother cannot feel the movement. Even though it is just 1 to 1.5 inches long and

still does not have all main organs and systems, the embryo is now known as a foetus after 8 weeks. The larynx begins to form, external reproductive organs develop, fingernails and toenails appear, eyelids form, foetal movement increases, arms and legs fully establish, and the foetal movement increases between weeks nine and twelve. By the end of the first trimester, the foetus weighs between 15 and 28 grammes and is on average 3 to 4 inches in height. (John Hopkins 2019.)

The safety of pharmacotherapy for both the mother and the growing foetus must be given the highest priority during the first trimester of pregnancy. The growing foetus could potentially be at danger from certain medications including nonsteroidal anti-inflammatory drugs (NSAIDs), antibiotics, antiepileptics, and antidepressants. These medications must be strictly avoided if at all feasible because they can raise the chance of miscarriage or congenital defects. (Pangtey & Agarwal 2020.) Alternative methods, such as alterations in lifestyle and non-pharmacological interventions, can also be successful in treating medical issues without the use of medications. To balance the risks and advantages when medicine is required, speaking with medical experts is crucial. An increased risk of birth abnormalities has been linked to the first trimester usage of angiotensin-converting enzyme (ACE) inhibitors, which are frequently used to treat high blood pressure and specific heart diseases (Fu, Tomlinson & Feig 2021)**.** Under the direction of a medical expert, switching to safer pharmaceuticals is advised during pregnancy.

3.4.2 **Pharmacotherapy During Second Trimester**

The second trimester begins from the thirteenth week of pregnancy and ends in the twenty seventh week, some women feel better than they did in the first trimester during the second trimester of pregnancy (Mayo Clinic 2022). Skin changes, a growing abdominal area, and bigger breasts are symptoms. The head becomes dominant, and the face begins to resemble a human face around the sixteenth week. The body has formed muscle motions, joints, and bones. The lungs have elastic fibres, and the heart muscle is well-developed. The cerebellum is prominent, and the kidney is positioned. Measuring between 11.5 to 13.5 centimetres in length, the foetus weighs approximately 100g. By the twentieth week, Legs elongate significantly; sebaceous glands emerge, measuring 16–18.5 cm in length and weighing around 300 g. Vernix caseosa and laugo develop recognisable ascending colon, Foetal movements become powerful enough for the mother to feel, the nose, ears and sternum ossifies. The nasal passages opening; rudimentary respiratory-like motions start. Brain is minimally developed; spinal

cord myelination starts and ends at the level of the first sacral vertebra (S1), and this is halfway through the pregnancy. The foetus is well-proportioned, slender, and height and weights are about 23 cm and 600 g at 24 weeks. The skin appears red and wrinkled, and the production of blood rises in the bone marrow and falls in the liver. Lecithin starts to appear in amniotic fluid, and the cerebral cortex is usually layered. Neural multiplication stops. Infant can hear. Tests from the inguinal ring moves down to the scrotum. (Lowdermilk et al. 2015.)

By the time the second trimester ends, the foetus has matured and there is a lesser risk of miscarriage. The developing foetus and the mother are stable during the second trimester of pregnancy, but to protect their health, safe medication must come first. During this period, any dangerous drugs or substances could have long-term impacts on the growth and health of the foetus. There has been a link between an increased risk of birth abnormalities and some drugs taken during this time. Healthcare providers need to carefully consider the risk-benefit ratio of treatments such as methotrexate, and several antiepileptic medications during the second trimester (Vural & Vural 2022). Pregnant women may have frequent symptoms in this trimester that necessitate the need for medication, ranging from mild illnesses to more serious ones like gestational diabetes or preeclampsia. Keeping these illnesses under control with safe treatment is essential to a successful pregnancy. Finding and using safe drugs for common diseases is just as vital as avoiding hazardous ones. Certain drugs are deemed safe to take during pregnancy, such as acetaminophen for pain relief and antacids for indigestion (Anderson, Lind, Simeone, Bobo, Mitchell, Riehle-Colarusso, Polen &Reefhuis 2020). Certain medicines, such as non-steroidal anti-inflammatory drugs (NSAIDs), antihypertensive pharmaceuticals like ACE inhibitors and angiotensin II receptor blockers (ARBs), and some psychiatric drugs like Selective serotonin reuptake inhibitors (SSRIs), must be avoided. These drugs may negatively impact the growing foetus, decreasing amniotic fluid, blood supply to the infant, and raising the possibility of foetal blood vessel closure before its time (D'Ambrosio, Vena, Scopelliti, D'Aniello, Savastano, Brunelli & Giancotti 2023). ACE inhibitors and ARBs have been associated to foetal difficulties, which might result in kidney dysfunction in the newborn. Individuals who are pregnant and have hypertension should examine alternate drug alternatives with their healthcare professional (Saunders, Callejas, Ting, Mammen, Terry & Bush 2021). SSRIs, which are routinely used to treat depression and anxiety disorders, have been linked to foetal problems, including heart abnormalities. Potential risks and benefits for both the mother and the unborn child must be carefully considered before deciding whether to stop taking SSRIs or keep taking them during pregnancy(Lebin &Novick 2022). Preterm contractions caused by several drugs during the second trimester might raise the chance of preterm labour, which can result in an early birth and difficulties for the mother and child. It is critical to assess the risks and necessity of any drug that may impact the contractions of the uterus during the second trimester. Furthermore,

sleepiness or constipation are examples of adverse effects that some drugs may produce, which can negatively impact the pregnant woman's general health and quality of life. (Coler, Shynlova, Boros-Rausch, Lye, McCartney, Leimert, Xu, Chemtob, Olson, Li, Huebner, Curtin, Kachikis, Savitsky, Paul, Smith & Adams 2021; Tang, Xu, Deng, Lian & Yu 2020.)

3.4.3 **Pharmacotherapy during Third Trimester**

In addition to being mentally and physically demanding the third trimester of pregnancy can cause symptoms including heartburn, dyspnoea, and back pain. Foetus weight increases. The foetus is red, slender, and less wrinkled at twenty-eight weeks. It is approximately 27 cm long, weighs about 1100g, and has nails. Weak motions arise from the ossification of the ankle bone and talus. Brain fissures start to show, and the suck reflex is not as strong. The retinal layers have been completed, the eyelids open, and the pupils become light-responsive. (Lowdermilk et al. 2015.) Subcutaneous fat starts forming between weeks thirty and thirty-one, the foetus looks rounder, and the skin turns pink and smooth. The foetus is 31 centimetres long and weighs between 1800 and 2100 grammes. The foetus can turn its head, the middle fourth phalanges ossify, and the permanent teeth primidia are evident. The testis descends to the scrotum in a male foetus and the foetus now has a sense of taste and sound. A full-term pregnancy with round, plump, rosy, and smooth skin develops by weeks 36–40. Only the upper torso and shoulders have Lango, and the foetus weighs between 2200 and 2900 grammes. It measures 40cm and weighs 3200g at week 40.

Safety throughout pregnancy is vital, particularly in the third trimester when medication usage might put the mother and foetus at danger since the foetus is towards the end of its development and might be directly affected by medications. Comprehending the physiology of this trimester is crucial for the selection of safe medications, dose monitoring, and avoiding teratogenic drugs and those that may have unfavourable effects on the developing foetus. During this time, painkillers, antacids, antiemetics, antihistamines, and decongestants are among the drugs that are deemed safe (Fisher, Goldstein, Siddiqui & Gokhale 2017). Pregnancy-related chronic disease management calls for cautious selection, close observation, and consultation with medical professionals. Acupuncture, physical therapy, and relaxation methods are a few examples of non-pharmacological and alternative therapies that might be deemed safe choices for symptom management throughout this trimester. Drugs can reach the foetus more readily when the placenta is less efficient (Fisher et al 2017). Antibiotics and antiepileptic drugs, for example, have been connected to a higher risk of side effects for the growing foetus. Acetaminophen usage during the third trimester was not significantly linked to negative effects on the foetus, according

to research by Diav-Citrin, Shechtman, & Lazarovich (2008). It is crucial to remember that going beyond the prescribed dosage might put the mother at greater risk of liver damage. For mothers with gestational diabetes, immediate insulin treatment is frequently employed throughout the third trimester. since uncontrolled diabetes can result in difficulties including stillbirth, macrosomia, and hypoglycaemia in the newborn. According to Linder , Damti, Landau, Sirota, Kogan, Ackerman & Berezovsky (2016), insulin treatment is a safe and efficient way to manage gestational diabetes, leading to better results for both the mother and the child.

A healthcare professional should be consulted before beginning any antibiotic therapy, even for macrolide antibiotics like azithromycin, which are thought to be safe to use throughout the third trimester. Prenatal vitamins, which include vital vitamins and minerals like folic acid, iron, and calcium, are prescribed as well to make sure that the mother and unborn child receive enough nourishment. Prenatal vitamins that have been specifically developed for pregnancy must be chosen to prevent receiving excessive amounts of any one nutrient, which can be fatal (Diav-Citrin et al 2008).

4 BREASTFEEDING

Breastfeeding is one of the easiest and most important ways to obtain whole packaged nutrition at one intake. WHO (2015) recommends breastfeeding should be started within the first hour after birth. Breastfeeding is considered a skill in which a mother feeds a baby with their breast milk. A baby suckles the breast which produces milk. Breast milk is considered a whole package nutrition because it contains all the essential nutrients as well as non-nutritional components that are important to infants. It always comes with the right temperature, consistency, and an appetizing color. Breastfeeding involves a chain of reflexes, glands and hormones that facilitate milk production.

4.1 Structure of the breast

The breast is an exocrine gland whose anatomy and physiology are adapted to its function by having structures that support the breast and produce hormones that facilitate milk production and feeding. The growth and development of breast starts in puberty, which is the first stage of breast growth, followed by pregnancy stage and finally lactation. At puberty, the breast development is only partial which is then completed at pregnancy. (Alex, Bhandary & McGuire 2020.) The breast, also known as the mammary glands, are remodeled sweat glands. They are made up of collagen and adipose tissue hence making up a part of the chest volume.

The tissues will then make the important part of the breast which are the ducts and the lobules, two epithelial cells, two stroma and several ducts that run onto the skin on the nipple of the breast. A cluster of alveoli make up the lobules which also make a cluster therefore lobes may be 12-20 in one breast. The lobules produce milk which flows into tiny ducts and further to larger ducts. The areola and the nipple then finally make up the outer part of the breast. The nipple is the protruding part of the breast where the baby sucks milk from while the round pigmented area around the nipple is the areola. The areola and nipple have sweat glands that secrete a moisturizing lubricant that soothes and protects the nipple from drying during breastfeeding. The areola also serves as the end of intercostal nerves. (Alex et al. 2020.)

4.2 Process of Lactogenesis

Alveoli aids in milk production. They are cells in the breasts that cluster together to form a grape-like structure. The produced milk will then be pressed out of the alveoli into the milk ducts which serve as pipes that carry milk into the nipples. Milk production is facilitated by the brain which signals the hormones to be released. The hormones prolactin and oxytocin are majorly used signaled by the brain. By the baby suckling, the brain will trigger the release of prolactin which facilitates the manufacturing of milk in the alveoli as well as oxytocin which triggers the muscles around the alveoli to press milk out into the ducts. The production of milk is known as the let-down reflex. (Pillay &Tammy 2023.)
The brain has a significant role in breastmilk production; therefore, it is important for the mother to relax so that the triggering of hormones is not interfered with and thus the milk production. The baby also has a key role in milk production through suckling, where they help remove milk and enhance more milk production by creating more room.

Giving birth can come with challenges like trauma and pain which can cause mood problems and postpartum depression, which is common. This condition affects the production of milk since the process is linked to the brain. There is also a connection/bonding between the mother and the baby and when this connection is interrupted the baby becomes irritated therefore refuses to breastfeed. Breast feeding mothers needs a calm and peaceful environment for them to produce sufficient milk and to focus on their baby. They also need support in all aspects of life; thus, the presence of the father is important. Therefore maintaining emotional and psychological support is important (Hotus 2010.)

4.3 **The Composition of breastmilk**

As stated earlier, human breastmilk is a standard nourishing meal for infants. Infants benefit from breastmilk by acquiring all the necessary nutrients and bioactive ingredients for healthy growth and development. WHO recommends exclusive breastfeeding for six months and this should be started an hour after birth. The human breastmilk composition varies between population and stage of lactation which may be affected by maternal and environmental factors. The nutritional components of breastmilk are focused on the maternal diet than on the lactocyte origin (Ballard &Morrow 2013.)
The earlier stages of lactation that is, immediately after giving birth, the first breastmilk that comes out is known as the colostrum. Colostrum has a different volume, color, and composition. It is full of immunological contents that include IgA, lactoferrin, leukocytes, and the epidermal growth factors (EGF)

which are the developmental factors (Ballard & Morrow 2013). Colostrum is low in nutritional mineral contents thus it majorly works as immunological and tropical product. Colostrum matures within five days to two weeks and by the fourth to sixth week its composition improves nutritionally to provide the nutritional and developmental support that the infant needs.

4.3.1 **Macronutrients**

Breastmilk is made up of macronutrients such as proteins, fats, and carbohydrates. It is approximated that there are 0.9-2g/dl of proteins,3.2-3.6g/dl of fat and 6.7-7.8g/dl of lactose in breastmilk while the energy content is approximately 65 to 70 kcal/dl, and this is attributed to the fat presence. The protein content of breast milk is categorized into whey and casein. They are a formation of precise proteins and peptides. Protein casein is made up of alpha -lactalbumin, lactoferrin, secretory immunoglobulin IgA, lysozyme, and serum albumin. Casein makes up the largest amount present in breastmilk compared to the whey proteins. (Ballard and Morrow 2013.)

Present in breastmilk is also non-protein, nitrogen containing products such as urea, uric acid, creatin, creatinine, amino acids and nucleotides which make up 25% of human milk nitrogen. The maternal diet has no effect on the protein concentration in breastmilk but is affected by maternal body weight and amount of milk produced, i.e., the amount rises with maternal weight for height and declines with higher milk production in lactating mothers. (Ballard & Morrow 2013.)

The fat content of the breastmilk is composed of palmitic and oleic acid. Palmitic acid is found abundantly in the second place of the triglycerides and oleic on the first and third place of the triglyceride. There are differences in the concentration of fat content, for example, the last portion of milk after towards the end of breastfeeding has 2-3 higher concentration of fat content compared to the first portion of milk during the start of breastfeeding. Over a 24-hour period, the breastmilk's fat content varies, where it is lower during the night and morning feeding and higher during the afternoon and evening feeding. These variations may be attributed to the maternal protein intake. (Kent, Mitoulas, Cregan & Hartman 2005.)

Disaccharide lactose is the main sugar component of breastmilk and is also less variable compared to other macronutrients. Lactose is present abundantly in mothers who produce more milk than those producing lower amounts. (Kent et al. 2005.) Other than the disaccharides, oligosaccharides are also present as a nutritive bioactive factor in breastmilk in sugar form.

4.3.2 **Micronutrients**

The micronutrients in breastmilk include vitamins A, B1, B2, B6, B12, D and iodine. These contents are not found in abundance therefore mothers are recommended to continue multi-vitamins intake during lactation. During childbirth, infants or newborns are injected with vitamin K, which helps prevent hemorrhagic disease. Vitamin K is particularly low in breastmilk. Vitamin D is also low in concentration in the breastmilk especially mothers who have minimal to no exposure to sunlight, therefore vitamin D supplementation should be continued after postpartum. (Allen 2012.)

4.4 **Pharmacotherapy During Breastfeeding**

It is estimated that 75% of mothers use certain medications or drugs in Finland (Terveyskirjasto 2023). Mothers may need medication during pregnancy which should also continue during breastfeeding. Medications are unavoidable but should be prescribed by a doctor, self-medication is risky and is therefore not allowed. The limited research about the use or safe medication during pregnancy hinders the use of some, medications however there are diseases such as depression, diabetes, high blood pressure, asthma etc., that needs to be treated throughout pregnancy and breastfeeding. The treatment of prevention of exacerbation of such disease continues by use of drugs that have already been researched and have been used before on pregnant and breastfeeding mothers. According to terveyskirjasto (2023), there is less drug exposure to babies through breastmilk therefore the use of medicines rarely hinders breastfeeding. It is important for mothers to discuss with the doctors their breastfeeding plan, including the length of breastfeeding. This will determine the length of exposure of the drug to the baby, i.e., the longer the baby breastfeeds the longer the exposure to the drug that the mother is using.

The use of medications during breastfeeding should follow the health experts' recommendations, which is the use of well-known medicines with the lowest effective dose. It is also recommended that the medicines should be taken just after breastfeeding to allow enough time for the medication to function and be broken down so that by the time the baby is feeding the dosage amount in the breastmilk has reduced. Another recommendation is that the mother and the baby should be monitored by taking the weight, observing the development and the general appearance. In each case these variables should

be normal. Sometimes the urine samples, blood sample and fecal samples are tested to check the concentration of the medicines in the baby's and mother´s excretions. There are rarely serious effects of the medication on the baby, but the long-term effects cannot be overlooked. (Terveyskirjasto 2023.)

4.5 **Benefits Of Breastfeeding**

Breastfeeding has been found to have several benefits both to the mother and the child. Dr Ruth Petersen, director of CDC´s Division of Nutrition, Physical Activity, and Obesity wrote that "Breastfeeding provides unmatched health benefits for babies and mothers. It is the clinical gold standard for infant feeding and nutrition, with breast milk uniquely tailored to meet the health needs of a growing baby. "(CDC, Breastfeeding, July 31,2023.)

4.5.1 **Improvement of cognitive development**

Previous research has shown that infants who have been breastfed for longer than six months have an increased IQ of 3-5 points. The results were obtained from different independent searches conducting a systematic review. However, there is no tangible evidence or explanation on how breastfeeding influences a positive effect of cognition, the results showed an improved cognition compared to those of maternal IQ. (Binns, Lee & Yun 2016.)

4.5.2 **Reduction of the risk of obesity in childhood and adulthood.**

Obesity is a major problem in the current world. Breastfeeding has been shown to have a protective effect in childhood although to adulthood. Children who are breastfed are categorized as less obese as compared to those who received additional formulas. From different research that has been and those updated by WHO, this effect can be attributed the human microbiomes. This human microbiome has been linked to obesity and its development can be hindered through breastfeeding. Statistics have also shown that infants that do not receive breastfeeding are 33% more likely to become obese, therefore breastfeeding is considered the first step to prevention of obesity. (Binns et al. 2016.)

4.5.3 **Protection against diabetes**

The relationship between breastfeeding and type1 diabetes through research has shown that breastfeeding protects against the onset of diabetes in adolescents and youths. The research showed that 1.25% of youths aged 21yrs developed diabetes whereby 0.58% were breastfed for at least 4 months while 0.29% were breastfed for at least four months. This research is not affected by BMI, smoking, physical activity, maternal age, education, or pre-pregnancy BMI. It was therefore concluded from the research that breastfeeding for at least more than four months has substantial importance in protection against the development of diabetes later in young adult ages. (Al Mamun, O´Callaghan, Williams, Najman, Callaway & Mclnytre 2015.)

4.5.4 **Active stimulation of the immune system and allergy prevention**

Breastmilk contains immuno-protective factors that protect the mucosal surfaces of the baby´s body such as the gastrointestinal mucosa and the respiratory tract and this characteristic therefore curtails the prevalence of infections. Breastfeeding actively stimulates the immune system and there is evidence showing that the thymus gland of an exclusively breastfeeding infant is twice the size of a formula-fed infant by the age of four months (Tarrant & Finlay 2023). Vaccination also becomes protective on exclusively breastfed infants. This effective mechanism of breastfeeding is attributed to the presence of T&B lymphocytes, anti-idiotypic antibodies, cytokines or growth factors found in breastmilk.

Breastmilk contains oligosaccharides, commonly known as human milk oligosaccharides, which help prevent allergies. Studies show that the first breast milk gives immunological factors to the baby that may protect against the predisposition and reaction to antigens. The second portion of breastmilk will then delay the predisposition to several potential allergens in food. The allergy prevention aspect can be attributed to intestinal mechanisms which involve the modification of microbiome. (Tarrant & Finlay 2023.) Since human oligosaccharides contain prebiotic effects which support the growth of microbiomes, they in turn shape their growth. Microbiomes facilitate the programing of and development of early-life immunity. The early microbiome modification leads to the balancing of the T-help cells, the most important part of the immune system.

4.5.5 **Benefits of breastfeeding to the mother**

Breastfeeding initiation at an early stage, especially immediately after birth, facilitates the mother's recovery from childbirth, by increasing the rate of uterine shrinkage and preventing hemorrhaging. Also, through breastfeeding hemoglobin is saved due to reduced blood loss, this therefore reduces maternal mortalities. Breastfeeding also plays a vital role in the reduction of the rates of ovarian cancer, premenopausal breast cancer, obesity, type 2 diabetes, and heart diseases (CDC, benefits of breastfeeding to a mother.)

4.6 **Challenges during breastfeeding**

Breastfeeding has numerous benefits to both the mother and the child which can be long- term or short- term, however, breastfeeding come with some challlenges that may cause a mother to stop breastfeeding earlier before the recommended period.

4.6.1 **Pain**

Breastfeeding comes with pain, especially during the first weeks after initiation, but others do not feel pain. Most women experience pain on the 3rd day, and this may continue up to 60days (Anipindi, Field & Elizabeth 2020). Pain can be influenced by factors such as physical, emotional, psychosocial, maternal, and infant phenomena. Pain can be remedied by ensuring a correct latching, ensuring that the mother gets enough sleep, is emotionally stable and treating physical problems such as nipple cracking and any wounds around the nipple. Some infants are, however, born with physical problems in the mouth such as palatial variations while other babies just suck hard. Pain and discomfort during breast feeding leads to early stopping of breastfeeding and opting to other modes of nutrition for the baby (Anipindi et al. 2020).

4.6.2 **Trauma in nipples**

This is a problem that occurs when the baby´s mouth attaches wrongly on to the nipple. Usually, the baby should attach well to the breast by having a big take instead of just suckling the nipple. The pain associated with the baby suckling the nipple therefore rubbing it against the hard palate which will

cause trauma to the nipples, and this also leads to cracking of the skin around the nipple which can predispose to infection if not properly treated (Terveyskirjasto 2022).

4.6.3 **Problem with the latching and tongue of the baby**

When breastfeeding, a mother should ensure that they are in a comfortable position while holding a baby to breastfeed. This therefore calls for correct latching or good attachment; the mother should sit, stand, or lie in a comfortable position and hold the baby well. The baby´s nose should be in level with the nipple, ensure that the baby´s mouth opens widely, insert the nipple into the baby´s mouth ensuring the chin touches the breast and the nose is open to prevent suffocation. Let the baby suck, full round cheeks show that the baby is latching well (Soite ward 3 2023) .In some cases, the tongue of the baby could be tied, a condition also known as ankyloglossia. This is an abnormal condition whereby the mobility of the tongue is insufficient due to short lingual frenulum causing shortcomings during feeding. This causes insufficient feeding of the baby and nipple pain for the mother. The problem can be remedied by surgery while the baby is still young (Anipindi et al. 2020.)

4.6.4 **Insufficient supply of milk**

During the initial stages of breastfeeding, there is often low milk production, especially for first-time mothers, but this improves over the days. Sometimes it feels like the baby does not get enough milk hence formula feeding is introduced to top up the need. However, this may bring negative outcomes whereby the mother relies more on formula feeding than on breast feeding leading to a gradual decrease in breast milk production. Research shows that frequent breastfeeding stimulates the production of more milk. In other occasions there are underlying causes of insufficient milk supply such as estrogen, alcohol, nicotine, and nicotine replacement therapy. Previous breast surgery may also be a reason as the procedure causes damage and trauma to nerves and milk production duct.

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4.6.5 Mastitis and breast abscess

Mastitis is an inflammation of the breast tissue that can be caused by a bacterial infection. It presents symptoms such as swelling, redness, pain, and fever. Apart from infection it can also be caused by over lactation causing clogging and pressure on the milk ducts leading to breakage of the ducts and later infection. The microorganisms causing infections are Staphylococcus aureus, staphylococcus epidermis, streptococcus and sometimes candida species. The remedy to mastitis includes frequent emptying of the milk ducts, use of analgesics to heal the pain and frequent breast feeding to empty the ducts. Antibiotics are also used but with careful prescription from the doctors (Anipindi et al. 2020).
Mastitis can cause breast abscess which is the build-up of pus in the breast and is usually painful. Breast abscess are a complication of mastitis and treatment can be through needle aspiration, surgical incision, and drainage. Mastitis and abscess should be treated as quickly as possible to avoid loss of breast functionality.

5 PURPOSE AND OBJECTIVE

The main purpose of this thesis was to produce an educational video for Centria UAS students to use as a reference material and learning. The thesis teaches about promotion of safe pharmacotherapy during breastfeeding, breastfeeding positions, and benefits of breastfeeding. The thesis also gives information about maternity care in Finland which will be fundamentally beneficial for international students as they get to understand how maternity care in Finland works. This thesis makes use of every evidence-based tool and resource that is used in Finnish hospitals as well as globally. As is essential for all Centria's nursing students, this project is entirely focused on the needs of the students and only contains theoretically accurate information. The written material section and video provide the most recent advice from several evidence-based sources. This study is trustworthy for both independent study and in-class instruction. Since Centria's nursing courses are highly practical, the video produced could be beneficial to nursing students. The reference used in this thesis are scientific and from evidence-based research and this is according to the requirements of Centria´s guidelines for thesis writing therefore nursing students can use it as reference and a learning material. Also, since Centria UAS promotes learning through videos, this can be used for purposes of teaching.

6 METHODOLOGY

6.1 Project phases

A project is a collaborative enterprise that is carefully planned to achieve a particular aim; therefore, this thesis was a project for producing an education video for Centria university nursing students and others. This project was carried out in several phases which are going to be described below.

6.2 Preparation and identification of need

Considering the general risk that has been associated with unsafe pharmacotherapy during pregnancies recently, their effect short term and long term, this thesis was done to bring awareness and educate its readers about how safe pharmacotherapy can be achieved and put into practice. A collaboration was initiated between the work life practice and project managers in August 2022 where the objectives and purpose were clearly stated and decided how and when to launch the project where proposition for launching the project, the suggestion period for the project launch was in Autumn 2023. The discussion also included signing of the thesis contract. Reliable international websites and local Finnish websites that provide scientific data-based research were sought after for a prospective use during the thesis process.

6.3 Initiation and Planning Phase

The initiation and planning phase included meeting with the work life-partner representative to discuss the process of the thesis and included the continuation of resources searching. At this stage, the project team was formed, since a supervisor should be available for the thesis and the work partner representative, there was also a meeting to discuss the various roles of the team as individuals and as a group. The thesis contract was also concluded at this stage.

6.4 **Implementation Phase**

The implementation phase was carried out in autumn 2023, and this involved drafting the thesis from the accumulated gathered sources, and the process of creating video began after the necessary information was gathered. The video was created in the Centria´s simulation classroom by the product developers, two videographers and edited with the help of the videographers, the filming took place in school and a license to make the video public and accessible with subtitles was agreed between the product developers since they were the actors in the video. The manuscript for the video was checked by the supervisor before filming. A first trial video was made , and sent to the supervisor and she made a few corrections to be made which was adjusted, and after this a survey was sent to the final year and third year nursing students which was voluntary and anonymous and they were asked to assess the video and give their feedback on what can be done better and how much the video has educated them and if there should be any additional information they would like to get from project of this kind and corrections were therefore made based on the feedback received.

6.5 **Closure Phase**

This phase began in early December 2023, and this included the review of the thesis written, plagiarism control was done, after this the project team had a meeting and where the project was approved, copies of thesis were printed out. Copyright transfers were made according to necessary procedure and ethical considerations. At the end, a meeting was held to dissolve the project team and reports were made.

6.6 **Project organization**

Every project needs a team to ensure the smooth running of the project process and a team was formed which included the project managers who were the authors of the thesis named Olaofe Enitan and Damaris Chepchumba. They drafted the thesis plan and started the thesis; they also ensured the thesis was progressing according to the schedule and gave tasks to the other members of the team. The project managers had to follow up on each task assigned and ensure final project reporting. The project launcher who decided when to launch the project was a representative of the work life partner. A

steering group was formed who approved the thesis plan, suggested changes that were necessary, over-saw the entire process and assisted in determining the project making location. This is Pia Hagqvist who was the project supervisor.

7 ETHICAL ISSUES

The project materials were obtained from reliable sources and plagiarism was avoided while also avoiding issues that are sensitive and controversial to the general population. The project stuck to the topic's purpose and did not deviate from it. The students conducting the project followed the stipulated guidelines for thesis project and the thesis timetable was followed and the students conducting the thesis project also ensured the privacy of the project participants. There was also a mutual understanding between the students conducting the thesis. The actors of the video were the authors of the thesis therefore consent was agreed upon before the shooting of the video. The participants were aware about the purpose of the project and their participation did not cause any social and financial harm. The video was not made sensitive and followed the guidelines available. The feedback questionnaire was voluntary and anonymous as well as the video report.

8 **REFLECTION AND CONCLUSION**

Our choice for making an educational video was based on our teacher's suggestion on the topic that needed to be researched and creating a video that students can use during study to learn. Evidence has shown that watching a video while studying helps in internalizing what you are studying, therefore the authors chose the topic because it interested them too. Thesis writing and video making is a long and tedious process that needs focus, time management, knowledge, and a frequent update of information.

The process of making an educational video has not been an easy task, starting from the rolling out of the plan, gathering of information from scientific evidence-based sources, compiling the information, setting a video shooting location, developing a manuscript, editing translating, and concluding the thesis has been a journey of its own. It was full of sitting for long hours in front of a computer, frustrations while making videos and at the end coming out with a beautiful product full of educational information. It was a good learning experience for us since we all participated and maximized our strengths and potential. Cooperation and time management was one of the most crucial factors when we made this product. There were times when we thought we could not finish the product in time and there were times when we also thought we had done everything right only for us to get feedback and realize our mistakes.

The authors of this thesis can attest to it that this was a great learning experience for them while making the video as well as for the target group considering the feedback received. We believe that we met our objectives, and this video can also be used during the teaching and learning process. We are happy with the final product, and we look forward to the use of this product accordingly.

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APPENDIX 1/1

THESIS LEARNING VIDEO MANUSCRIPT

Video name: Safe Pharmacotherapy during pregnancy and lactation.

First slide: cover page

Part 1: Greetings and Introduction.

Pregnancy and lactation period also known a breastfeeding period are especially important periods in a family as they expect a new baby, and they also adjust to the addition of a child. During pregnancy, the female body undergoes certain changes, therefore, the expectant and lactating mother must be more cautious about the use of medication during these periods. In this video, the patient and nurse will discuss safe pharmacotherapy during pregnancy, breast feeding and different breast-feeding methods. (2 secs)

Part 2: Pregnancy Notification (Nurse Office).

Phone ringing.....(5 secs)

Nurse: (Picks up the call): Hello, Nurse Enitan, gynaecology maternity clinic, Centria Hospital, how can I help you? (5 secs)

Patient: hello, I am Jasmine Williams, I think I am pregnant because I have missed my period and took a home pregnancy test and it tested positive. (8 secs)

Nurse: OK., can I have your social security number please? (4 secs)

Patient: OK, it is 050697311F. (9 secs)

Nurse: Jasmine Williams. (2 secs)

Nurse: Now I am going to ask you some questions, when was your last menstrual cycle and when did you do the home pregnancy test. (8 secs)

Patient: My last period was on the 26th of August, that is about seven weeks ago, and I did a pregnancy test this morning because of the missed period and I have been feeling tired. (17 secs)

Nurse: OK, it sounds like a suspected pregnancy, but it is better to confirm the pregnancy with a laboratory test. So, is it okay if I book you an appointment to the laboratory? (11 secs)

Patient: Yes, it is fine. (2 secs)

Nurse: OK, now is it also OK to book you an appointment to our maternity clinic tomorrow? Because by then we will have your test results. (12 secs)

Patient: yes (1 sec)

Nurse: So, we will have a time by 9:00 AM or 10:00am here, if you would want that. (6 secs)

Patient: okay, yes thank you that 9:00 AM tomorrow, I think it would be fine for me (8 secs)

Nurse.: OK You will get an appointment confirmation by text. Thank you, bye. (8 secs)

Patient: Bye, thank you. (3 secs)

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Part 3: Pharmacotherapy during pregnancy and lactation.

Following day at the nurse office.....

Nurse: Good morning, I am nurse Enitan and we talked yesterday on the phone. How are you feeling today. (7 secs)

Patient: I am just feeling nauseous, tired and I have been vomiting in the morning. (4 secs)

Nurse: okay, we got your laboratory tests back and it is confirmed you are 8 weeks pregnant, congratulations. (9 secs)

Patient: Thank you. (1 sec)

Nurse: So, pregnancy starts at conception, and that is when there is a viable egg fertilized by a sperm, because of this, some hormones become more produced and your body experiences some changes such as your breast becomes sore, you missed your period just as you have, nausea, cramping, spotting, constipation, heart burn, acne, back pain, and so many other symptoms. There is the HCG which was

tested for in the lab and it confirmed the pregnancy. Pregnancy has three trimesters, which are the first trimester, the second trimester, and the third trimester. So, the first trimester last about 12 weeks, from the first week to the twelfth week and each trimester lasts about that, pregnancy is 40 weeks, but you get to full term from the thirty sixth week of pregnancy. Calculated from the last menstrual cycle. Do you have any regular medications you use or something? (1min 7 secs)

Patient: No, I have been healthy, so I do not use any medication. (4 secs)

Nurse: Do you use cigarette, alcohol, or any other drugs? (3 secs)

Patient: No, I do not use. (2 secs)

Nurse: Okay that is good, so for now you are in the first trimester and it is very crucial because at this stage there is higher risk of miscarriage and since you have no medication, you don't have to use anything except the doctor prescribes it for you and at this point, the doctor will most likely prescribe folic acid to you to aid the development of the foetus, but you cannot use it without the prescription of a doctor. If you have medication you use before, you must discuss this with the doctor. Also, as you are now, you might feel some pain and be eager to use pain medication but for now you must discuss it with a doctor, a nurse, or a midwife before you can use any medication. It is safer to use Paracetamol, but you cannot use steroids, non-anti-inflammatory steroids. You cannot take vaccine except vaccine that have been advised for you to take while pregnant. Do you understand so far? (1 min 12 secs)

Patient: I do understand (2 secs)

Nurse: Also, after delivery, when you give birth and you are breastfeeding, it is important you also follow safe medication after delivery.

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I would give you this manual, it is a manual you follow during pregnancy, it contains the medication and the phone number of the neuvola so you can call us if you have any questions, or you want to book an appointment. We would send a message to you about follow up appointments and appointments with the doctor so for now that is it. (38 secs)

Patient: Okay thank you so much (2 secs)

Nurse: Thank you. (1 sec)

PART 4: Breast feeding Positions

Nurse: (Enters patient's room)

Nurse: Hello this is nurse Damaris I am Nurse Damaris, how are you, how is the baby? (4 secs)

Mother: She is fine (1 sec)

Nurse: She is so beautiful (2 sec)

Mother: Thank you (1 sec)

Nurse: I am going to check her; the first nurse has checked her vitals and how the baby is. (7 secs)

Mother: yes, she said they were good. (1 sec)

Nurse: I am going to ask you how she is breastfeeding (3 secs)

Mother: It is a bit difficult because it is weird trying to position her and I do not know how well she is latching and how often to feed her (5 secs)

Nurse: okay, do not worry I will show you that, so I will take her. First I need to tell you some basics that when breastfeeding the baby make sure that the mouth is wide open and you can see from the cheeks when the nipple is in the mouth and they are sucking, you can see it from the cheeks that it is opening and closing and also you can hear the suckling and swallowing that is when you know the baby is getting milk and you should breastfeed the baby every three hours so you can set an alarm.

So, the first position is the cradle position, so the cradle position you hold the baby in a cradle, make sure that the baby's navel is directly pointing to your navel and the nose and mouth should be in the nipple area, support the mouth of the baby from below and then you direct your breast can I? (1 min 12 secs)

Mother: Yes (1 sec)

Nurse: Direct the nipple into the mouth of the baby and then you can follow up how the baby is getting milk. Now the second position is the cross Cradle, and, in this position, you are going to put the

baby in this position and your hand comes this way and support the baby from this side, good, so that is the second position. The third position is the lying position

Appendix 1/4

The third position is the side lying, so you and the baby should lie and face each other again navel to navel, good so you can see how the baby is taking the milk, so this is when you want to relax. Then we have the fourth position that is the football position, it is like you are holding the baby on the side and you can support with a pillow. Good... that is a very good

position. And we have the fifth position called the laid back, so you lay, that is a very relaxing position so with the pillows supporting your back, so you lay down and put the baby in front. Yes good. So, you can change from one breast to another and once again make sure that your navel is facing the baby's navel. Navel to navel and then the nose to the nipple. Good.

So those are the positions that we have, and you can choose which one suits you and the baby best. (1 min 45 secs)

Mother: Okay (1 sec)

Nurse: Do you have any question at this point? (3 secs)

Mother: I bought some pacifiers, and I was wondering when I can start to use them. Yes, these ones. (8 secs)

Nurse: So, pacifiers are okay buy we do not recommend it on the first stages, in the initial period when the baby is still learning how to breastfeed, we do not recommend them. You can use it later when the baby has already learnt how to breastfeed, and they are getting enough milk. So, you can use it later in the stages, so you can keep it and use it later. Also in cases you have sore or other have small or inverted nipples, they can use small nipple- like cup that is made of silicone that are soft to the baby's mouth that helps with the sucking , to prevent direct sucking on the nipple, those cups have holes and the baby sucks and gets the milk from them. Any other question? (1 min)

Mother: No (1 sec)

Nurse: Okay so I have this manual for you, you can read about breastfeeding and if you have any question, you can always ask and call for the nurse for help. Thank you, bye (13 secs)

Mother: Bye. (1 sec)

APPENDIX 2/1

Transcript in Finnish

Videon nimi: Turvallinen lääkehoito raskauden ja imetyksen aikana.
Ensimmäinen dia: kansilehti
Osa 1: Tervehdys ja esittely.
Hei kaikki, tänään aiomme kouluttaa teittä turvallisesta lääkehoidosta raskauden ja imetyksen aikana. Raskaus- ja imetysaika, joka tunnetaan myös imetys jaksona, ovat erityisen tärkeitä ajanjaksoja perheessä, koska he odottavat uutta vauvaa, ja he myös sopeutuvat uuteen vauvaan. Raskauden aikana naisen kehossa tapahtuu tiettyjä muutoksia, joten odottavan ja imettävän äidin on oltava varovaisempi lääkkeiden käytössä näinä aikoina. Videossa potilas ja hoitaja keskustelevat raskaudenaikaisesta turvallisesta lääkehoidosta, imetyksestä ja erilaisista imetysmenetelmistä.

Osa 2: Raskausilmoitus (sairaanhoitajan toimisto).
Puhelin soi..... (5 secs)
Sairaanhoitaja: (Vastaa puheluun): Hei, sairaanhoitaja Enitan, naistentautien neuvola, Centria-sairaala, miten voin auttaa sinua? (5 sec)
Potilas: Hei, olen Jasmine Williams, luulen olevani raskaana, koska kuukautiseni ovat jääneet väliin ja tein kotiraskaustestin ja se oli positiivinen. (8 secs)
Sairaanhoitaja: OK., voinko saada henkilötunnuksesi? (4 secs)
Potilas: OK, se on 050697-311F (9secs)
Sairaanhoitaja: milloin oli viimeinen kuukautiskiertosi ja milloin teit raskaustestin? (8 secs)
Potilas: Viimeiset kuukautiseni olivat 26. elokuuta, eli noin seitsemän viikkoa sitten, ja tein raskaustestin tänä aamuna, koska kuukautiset jäivät väliin ja olen tuntenut oloni väsyneeksi.
Sairaanhoitaja: OK, se kuulostaa epäillyltä raskaus, mutta on parempi vahvistaa raskaus laboratoriokokeella. Onko ok, jos varaan sinulle ajan laboratorioon? (17 secs)
Potilas: Kyllä, se on hyvä. (2 secs)
Hoitaja: OK, sopiiko myös varata sinulle huomisen aika neuvolaamme? Koska siihen mennessä meillä on testituloksesi. (12 secs)
Potilas: kyllä (1 sec)
Sairaanhoitaja: Meillä on aika klo 9.00 tai 10.00 täällä, jos haluat sen! (6 secs)
Potilas: Okei, kyllä kiitos, huomenna klo 9.00 sopii minulle. (8 secs)
Sairaanhoitaja.: OK Saat ajanvaraus vahvistus tekstiviestillä. Kiitos hei. (8 secs)
Potilas: Heippa, kiitos. (3 secs)
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Osa 3: Lääkehoito raskauden ja imetyksen aikana.

Seuraavana päivänä sairaanhoitajan vastaanotolla.....

Sairaanhoitaja: Hyvää huomenta, olen sairaanhoitaja Enitan ja puhuimme eilen puhelimessa. Mitä kuulu tänään? (7 secs _

Potilas: Olen vain pahoinvoiva, väsynyt ja olen oksentanut aamulla. (4 secs)

Sairaanhoitaja: Okei, saimme laboratoriokokeesi takaisin ja on vahvistettu, että olet 8-viikkoa raskaana, onnittelut. (9 secs)

Potilas: Kiitos. (1 sec)

Sairaanhoitaja: Raskaus alkaa hedelmöityksestä, ja silloin kun siittiöitä ovat elinkelpoinen munasolu, minkä vuoksi jotkut hormonit tuottavat enemmän ja kehosi kokee joitain muutoksia, kuten rintasi kipeytyy, menetit kuukautiset aivan kuten sinulla on, pahoinvointi, kouristukset, tiputtelu, ummetus, närästys, akne, selkäkipu, ja niin monia muita oireita. Siellä on HCG, joka testattiin laboratoriossa ja se vahvisti raskauden. Raskaudessa on kolme raskaus vaiheet, ensimmäinen raskaus-vaihe, toinen raskaus-vaihe ja kolmannes. Ensimmäinen raskaus-vaihe kestää noin 12 viikkoa, ensimmäisestä viikosta kahdestoista viikkoon ja jokainen raskausvaihe kestää suunnilleen sama aika. Raskaus on 40 viikkoa, mutta pääset täysiaikaiseksi 36-raskausviikosta. Laskettuna viimeisestä kuukautiskierrosta. Onko sinulla säännöllisiä lääkkeitä, joita käytät tai jotain? (1 min 7 secs)

Potilas: Ei, olen ollut terve, joten en käytä mitään lääkkeitä. (4 secs)

Sairaanhoitaja: Käytätkö savuketta, alkoholia tai muita huumeita? (3 secs)

Potilas: Ei, en käytä. (2 secs)

Sairaanhoitaja: Okei, se on hyvä, joten tällä hetkellä olet ensimmäisellä kolmanneksella ja se on erittäin tärkeää, koska tässä vaiheessa keskenmenon riski on suurempi ja koska sinulla ei ole lääkitystä, sinun ei tarvitse käyttää mitään muuta kuin lääkäri määrää sen sinulle ja tässä vaiheessa lääkäri todennäköisesti määrää sinulle foolihappoa sikiön kehityksen tukemiseksi, Mutta et voi käyttää sitä ilman lääkärin määräystä. Jos sinulla on lääkkeitä, joita käytät aiemmin, sinun on keskusteltava asiasta lääkärin kanssa. Myös nyt, saatat tuntea kipua ja olla innokas käyttämään kipulääkkeitä, mutta toistaiseksi sinun on keskusteltava siitä lääkärin, sairaanhoitajan tai kätilön kanssa ennen kuin voit käyttää mitään lääkitystä. Parasetamolin käyttö on turvallisempaa, mutta et voi käyttää steroideja, ei anti-inflammatorisia steroideja. Et voi ottaa rokotetta, Ellei on neuvottu otettavaksi raskauden aikana. Ymmärrätkö toistaiseksi? (1 min 12 secs)

Potilas: Ymmärrän kyllä. (2 secs)

Sairaanhoitaja: Myös synnytyksen jälkeen, kun synnytät ja imetät, on tärkeää, että noudatat turvallista

lääkitystä myös synnytyksen jälkeen.
Annan sinulle tämän käsikirjan, se on käsikirja, jossa on säännöt, jotka noudatat raskauden aikana. Se sisältää myös lääkityksen ja neuvolan puhelinnumeron, joten voit soittaa meille, jos sinulla on kysyttävää tai haluat varata tapaamisen. Lähetämme sinulle viestin seuranta käynneistä ja tapaamisista lääkärin kanssa. Näillä ohjeilla mennä alustavasti. (38 secs)
Potilas: Okei, kiitos paljon (2 secs)
Sairaahoitaja:Kiitos.(1 sec)

OSA 4: Imetys Keskustelu

Sairaanhoitaja: (menee potilashuoneeseen)
Sairaanhoitaja: Hei, olen sairaanhoitaja Damaris, miten voit, miten vauva voi? (4 secs)
Äiti: Hän voi hyvin. (1 sec)
Sairaanhoitaja: Hän on niin kaunis 2 sec)
Äiti: Kiitos (1 sec)
Sairaanhoitaja: Minä tarkistaa hänet, ensimmäinen sairaanhoitaja on tarkistanut hänen vitaalit ja kuinka vauva voi. (7 secs)

Äiti: Kyllä, hän sanoi, että ne olivat hyviä. (1 sec)
Sairaanhoitaja: Kysyä sinulta, miten hän imettää (3 secs)
Äiti: Se on vähän vaikeaa, koska on outoa yrittää saada hyvä asento, enkä tiedä kuinka hyvin hän ime ja kuinka usein minun pitää ruokkia häntä (5 secs)
Sairaanhoitaja: Okei, älä huoli, näytän sinulle sen, joten otan hänet. Ensin minun on kerrottava sinulle perusasioita. Kun imettää vauvaa varmista, että suu on auki ja näet poskista, että nänni on suussa ja imevät. Näet poskista, myös että suu avautuu ja sulkeutuu, ja voit myös kuulla imemisen ja nielemisen, jolloin tiedät, että vauva saa maitoa ja sinun pitäisi imettää vauva kolmen tunnin välein. Voit asettaa hälytyksen itsellesi.
Joten ensimmäinen asento on perinteinen kehto asento. Kehto asennossa pidät vauvaa lähelläsi, varmista, että vauvan napa osoittaa suoraan napaasi ja nenän ja suun tulee olla nännin alueella, tue vauvan suuta alhaalta ja sitten ohjaat rintaasi. voinko näytä? (1 min 12 secs)
Äiti: Kyllä (1 sec)
Sairaanhoitaja: Ohjaa nänni vauvan suuhun ja sitten voit seurata, miten vauva saa maitoa. Toinen

asento on ristikehto asento ja tässä asennossa aiot laittaa vauvan tähän asentoon, ja kätesi tulee tällä tavalla ja tukee vauvaa tältä puolelta, hyvä, joten se on toinen asento. Kolmas asento on makuuasento Kolmas asento on sivu makaamassa, joten sinun ja vauvan tulisi maata ja kohdata toisensa uudelleen napa napaan, hyvä, jotta voit nähdä, kuinka vauva ottaa maitoa, joten tämä on silloin, kun haluat rentoutua. Sitten meillä on neljäs asento, joka on jalkapallo-asento, se on kuin pitäisit vauvaa sivulla ja voit tukea tyynyllä. Hyvä ja se on erittäin hyvä asema. Ja meillä on viides asento, jota kutsutaan rennoksi taaksepäin, joten makaat, se on erittäin rentouttava asento, joten tyynyt tukevat selkääsi, joten makaat ja laitat vauvan eteen. Kyllä hyvä. Voit vaihtaa rinnasta toiseen ja varmistaa jälleen kerran, että napasi on vauvan napaa kohti. Napa napaan ja sitten nenä nänniin. Hyvä. Joten nämä ovat asennot, jotka meillä on, ja voit valita, mikä sopii sinulle ja vauvalle parhaiten. (1 min 45 secs)
Äiti: Okei (1 sec)
Sairaanhoitaja: Onko sinulla kysyttävää tässä vaiheessa? (3 secs)
Äiti: Ostin tutteja ja mietin, milloin voin alkaa käyttää niitä. Kyllä nämä. (8 secs)
Sairaanhoitaja: Tutit ovat kunnossa ostaa, emme suosittele sitä ensimmäisissä vaiheissa, alkuvaiheessa, kun vauva vielä oppii imettämään, emme suosittele niitä. Voit käyttää sitä myöhemmin, kun vauva on jo oppinut imettämään ja hän saa tarpeeksi maitoa. Voit käyttää sitä myöhäisissä vaiheissa, joten voit pitää sen ja käyttää sitä myöhemmin. Myös tapauksissa, joissa sinulla on kipeä tai muulla on pienet tai käänteiset nännit, he voivat käyttää pieniä nännin kaltaisia kuppeja, jotka on valmistettu silikonista, jotka ovat pehmeitä vauvan suuhun, mikä auttaa imemisessä, estääkseen suoran imemisen nännistä, näissä kupeissa on reikiä ja vauva imee ja saa niistä maidon. Onko sinulla muita kysymyksiä? (1 min)
Äiti: Ei (1 sec)
Sairaanhoitaja: Okei, minulla on tämä käsikirja sinulle, voit lukea imetyksestä ja jos sinulla on kysyttävä, voit aina kysyä ja soittaa sairaanhoitajalle apua. Kiitos hei (13 sec)
Äiti: Heippa. (1 sec)

APPENDIX 3/1

This survey is created by Olaofe Enitan and Chepchumba Damaris, final year nursing students of Centria university as part of their requirement for their thesis. This is to inform you that participation in this survey is VOLUNTARY and no personal information will be used and participation is anonymous.

Thank you.

1. Which nursing group do you belong to?
   - NNRNS20K
   - NNRNS21K

2. Do you think the length of the video was appropriate for the topic?
   - YES
   - NO
3. Was the content of the video related to the topic?
   - YES
   - NO
4. Was the patient guidance given in the video enough?
   - YES
   - NO
5. Was the quality of the sound and video clear?
   - YES
   - NO
6. Did the video educate you more on the topic?
   -

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- YES

  NO

7. Do you think the educational video fulfilled its purpose?

- YES

  NO

8. Do you have feedback or recommendation for the video?